

The Material Culture of Oruarangi, Matatoki, Thames.

1. Bone Ornaments and Implements.

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Oruarangi is an old *pa* site, about three acres in extent, lying to the east of the Waihou River, some six miles south of Thames. At present the area consists of about four feet depth of sand, ash and shell middens raised above the surrounding swamp, and contained implements and other articles at all levels.

The site was dug over by a private collector, who obtained an extensive series of adzes, fishing sinkers, tops and numerous other stone articles, a few specimens made of shell, and very many bone implements, some of which are complete, others being in various stages of manufacture.

Unfortunately systematic stratigraphical details were not kept, and it is only possible now to give descriptions of the articles recovered. The present paper will deal only with the bone articles, the remainder being reserved for a future contribution.

Methods of Working Bone.

The collection contains so many partly fashioned articles that it is possible to give an outline of the methods employed in their manufacture. The bones used at Oruarangi were from human remains, the native dog, various cetaceans, certain large sea birds, and, occasionally, fish such as the snapper. Moa bones were apparently not used.

Whether it was intended to cut the bone longitudinally or transversely, the methods employed were much the same. A reference to Plate 61, figs. 1, 2, will show the steps mentioned fairly clearly. First a cut was made with a piece of sharp chert or obsidian, as in fig. 1. This was deepened with further cuts, followed by a sawing process, fig. 2, performed with the aid of a sandstone rubber. The sandstone rubber shown here (fig. 3) is 112 mm. in length, 38 mm. across at the widest part, and varies in thickness from 3-5 mm. It is worn smooth on all the edges, a sure proof of continual use. Usually the cutting and sawing were done from both sides until the two cuts nearly met, when perhaps pressure was exerted with the hands until the cleavage was completed.

The specimens chosen to illustrate the various stages of the manufacturing process are all lower jaw bones of the native dog. Final shaping was secured either by carefully rubbing the bone on a piece of sandstone, or else using the sandstone as a rubber.

How constant a use was made of the drill is indicated by the many perforated needles, toggles and pendants, and by the numerous stone drill points found throughout the site.

By way of further illustration, several objects showing evidence of cutting are mentioned here (figs. 4-8). Fig. 4 is a piece of human skull with two grooves cut therein, the wider of the two being 5 mm. in width. Human bone has been also used in fig. 5, where we have a piece of femur sawn through and then broken off, and again in fig. 6, showing a portion of a lower jaw, really waste material thrown away after a strip of bone had been cut from it. The lower jaw of a native dog, fig. 7, shows a section of bone in process of removal.

ORNAMENTS AND ARTICLES OF PERSONAL ADORNMENT.

A wide variety of ornaments manufactured in bone was procured from the site. These included a *rei puta*, and pendants of various shapes, some carefully made and decorated, others fashioned in a somewhat crude manner. Ornaments of human and dogs' teeth were also found.

Rei Puta.

Neck pendants of this type, sometimes called *rei paraoa*, are rare. In the Auckland Museum collection we now have seven. Skinner (1923, p. 32) gives details of *rei puta* in other collections. This particular specimen, 19558 (Plate 62, fig. 8), differs somewhat from the recognised type in that it is thin in section throughout. In all typical examples, the *rei puta* is thin in section at the top, becoming suddenly thicker towards the bottom. Two eyes set obliquely at the lower end of the pendant definitely determine its classification as a *rei puta*. Made from a whale's tooth split longitudinally, it has two holes drilled at the top, one in each corner, to allow of suspension by a flax cord from the neck.

The dimensions are as follows: Length 122 mm., width at proximal end 34 mm., gradually tapers to 19 mm. at a point 20 mm. from the distal end.

Human Teeth.

Twenty-two human teeth, all perforated at the fang end, have been classified by Dr. H. A. Chatfield as follows: 9 Cuspid, 2 Central, 6 Molar and 4 Pre-molar. One had been worked down to such an extent that identification was impossible. In almost every case the hole was drilled as close as possible to the end of the fang. One of the molars has had both fangs drilled, while two have had the second fang removed.

Best (1924, Vol. 2, p. 537 and p. 543) mentions human teeth being used as ear pendants, or strung to form a necklace. As comparatively few were found at Oruarangi, they may perhaps have been intended for ear pendants, but on that point we cannot dogmatise.

Dogs' Teeth.

Twenty-nine specimens of the canine teeth of the native dog, or *kuri*, have been drilled, but show no other signs of working except in the case of three, to be mentioned later. Evidently these teeth were intended for use either as ear pendants or to form a necklace. In one tooth the hole has not been completed, but it is of interest, for it shows clearly the method of drilling, first from one side and then from the other, giving rise to a crater shaped hole in each case.

Three of the pendants differ from the remainder. Two have a tiny rounded knob cut at the fang end, with the hole drilled immediately below it (Plate 62, figs. 13, 14). The third (fig. 15) has been squared and flattened for a short distance at the fang end. Through this flattened portion the hole has been drilled. The longest specimen in the series is 41 mm. in length. Ninety canine teeth, lacking any trace of working, indicate that at one period the *kuri* was reasonably plentiful at Oruarangi. Mention will be made of those used for barbed fish hook points when treating of the barbed points and articles used for fishing.

Pigs' Tusks.

This seems to be the appropriate place to mention two fragments of pigs' tusks (Plate 62, figs. 16, 17) that were apparently worn as pendants. The longer of the two is 37 mm., the shorter 30 mm. Both have a hole drilled in true Maori style, and both have been fractured unevenly. They are of special interest, because they give an indication as to the period during which some at least of the material was manufactured. However, for the present we merely note the fact, and shall have occasion to refer to it later.

Sharks' Teeth.

Only two teeth of the *mako* shark (19151.1, .2), (Plate 62, figs. 18, 19) are in the collection. Both are drilled for suspension. Two eyes are clearly cut out at the fang end on one specimen, while the other has only one. Probably small pieces of *paua* shell were inserted to give the eyes a more realistic appearance.

Miscellaneous Pendants.

The specimens dealt with in this subsection may have been pendants worn singly, or they may have been strung with other perforated specimens to form a necklace of assorted pieces of bone.

Specimen 19592.1 (Plate 62, fig. 20) is the largest of four pendants made from the supra-occipital bone of the snapper. It is 81 mm. long and at one time had a hole at the back, but this has broken away. Carved in front is a human face, the most noticeable features being the large eyes and mouth.

Its companion, 19592.2, is 68 mm. in length, lacks a perforation, yet shows some signs of a crude attempt at carving. The

smallest complete specimen, 19592.3, is only 63 mm. long and shows no evidence of any carving whatever. A portion of a snapper supra-occipital bone has been drilled and decorated with narrow grooves. Such bones, either carved or drilled, are sometimes found in other parts of the Auckland Province.

An interesting specimen is 19588 (fig. 21), made from a piece of a human skull. This pendant is 47 mm. long and has been carved to represent the eye and mouth of a human being. The execution is very fine; in fact the whole design is effective and pleasing. I know of no other specimen like it. It will be noted that a second hole has been drilled, the first having carried away. The drilling of the second hole has resulted in the pendant being worn upside down, that is to say, on its head. Two interesting pendants are illustrated in figs. 22, 23, an ankle and toe bone respectively, both perforated.

Combs or Heru.

In addition to perfect combs, there are some fifteen fragments and a number of detached teeth. The most perfect and also an unusually large example is 19640 (Plate 63, fig. 24). It is typical of Maori combs, having the rounded top and the design carved at the side. It is 240 mm. in length and 84 mm. wide at the widest part. It possesses seven broad teeth, of an average width of 6 mm., the longest tooth being 94 mm. in length. Like most of the bone combs, it is made from the lower jaw of a species of whale. This fact would account for the gradual tapering, usually a noticeable feature of Maori bone combs.

In contrast to this large comb is a small one, 19638 (fig. 25), 72 mm. long and 30 mm. wide at the widest part. The teeth, which are about half the length of the comb, are six in number, one of which has been broken. At one side is a crude piece of carving that does not display the artistry usually seen in such work.

Although the next specimen, 19639 (fig. 26) is only a fragment, it is of great interest. In its perfect state the comb was obviously a large one, but unfortunately was broken, so the owner drilled five holes along the fractured edge, from which perhaps feathers were hung by way of ornamentation. Five teeth were left intact, though they, too, have suffered damage at a later stage.

Toggles or Poro toroa.

Of toggles there were found 36 perfect specimens and 12 fragments, but several of the latter showed "secondary working," i.e., they had been converted into *uhi*, or tattooing implements.

They are mostly made from the wing bones, or, more precisely, the humerus or ulna of sea birds, such as the gannet or albatross.

Of the perfect specimens, only 8 show signs of decorative work. These are decorated at one, or in some cases both ends, with short, deeply cut notches. One, 19565.36, is also decorated with chevroned lines cut into the bone. A broken toggle exhibits

a series of chevrons, while another fragment shows lines criss-crossing in such a way as to form diamond-shaped areas of unequal size.

There are 29 pieces of varying lengths cut from the humerus or ulna of a sea bird, the majority of which must have been intended for toggles, though some may have been cut with a view to making flutes or short sections to form a necklace. The longest piece measures 156 mm.

Of these lengths many illustrate stages in the making of a toggle. Perhaps the best of this series is 19617.10 (Plate 66, fig. 27), a piece of the humerus of a sea bird, 113 mm. in length, with a secondary transverse cut 34 mm. from the end. Possibly the craftsman intended to obtain several toggles from this piece. Several, cut to the required length, have been decorated or partially decorated with notches, although no attempt at drilling the hole has been made. Of interest is a short specimen, 19565.44, showing the first stage in the drilling of the hole.

Cloak Pins.

Four perfect specimens and five fragments of cloak pins are included in the collection. The two best specimens, Nos. 19568.2 and 19568.4, are both made of whale ivory, and measure 119 mm. and 86 mm. respectively. Both have been carefully worked and show a neatly executed perforation at the top.

Implements.

Several hundred implements, some only partially finished, are included in the collection. The comparative shortage of bone implements discovered in the Auckland Province in the past, adds importance to their consideration.

Needles.

In the manufacture of bone needles, the material from which the needle was obtained varied according to the material at hand. In the majority of cases it is not possible to give an opinion owing to the working and polishing of the bone.

Of special interest are two pieces of the lower jaw of the native dog, both showing a needle in process of manufacture. In each case the shape of the needle is clearly indicated. Plate 64, figs. 29-32, shows a series arranged to illustrate the various stages in the manufacture of a needle from the lower jaw of the native dog. The top specimen (fig. 29) shows an untouched jawbone, below that is a jawbone (fig. 30) with the first cut or groove shown, below that again a specimen (fig. 31) with the needle almost cut out, while the final specimen (fig. 32) shows the finished article.

The Quennels (1921, p. 81) illustrate very carefully the Solutrean method of needle-making. The raw material was reindeer horn, but the method of cutting out the needle by forming a groove on either side of the piece of horn, was the same as is illustrated here with the native dog's jaw.

Needles in this collection are represented by some 57 perfect specimens, in addition to many fragments, a good proportion of which are only slightly damaged, as, for instance, where the point is broken or the eye damaged. The collection of needles is extremely interesting, for in almost every case they are tangible evidence of the great skill and care exercised by the Maori craftsman. Some of the needles are only splinters of bone, yet they are highly polished, and the eye or hole drilled very carefully. When drilling a needle the strictest care was necessary to prevent the hole encroaching on the side. A careful examination of the 57 perfect specimens fails to reveal a single instance where a second hole had to be drilled. With one exception, 19568.5, the holes were always drilled without a preliminary cut.

The needles are of three main types, (a) those that are flattened and broad on the face and flat in section, (b) those that are rounded on the face and round in section, and (c) a curved type; but the three groups are connected by intermediate types. For instance under type (a) are some that are very broad and could almost be placed in a sub-section. They resemble perhaps bodkins rather than needles.

Naturally it is not possible to give details of the whole of this interesting group, but the table below gives particulars of the type and certain dimensions of those illustrated in Plate 64, figs. 33-58, and is followed by some mention of particular specimens where necessary.

Museum No.	Fig.	Type.	Length mm.	Greatest Width mm.
19569. 3	33	a	109	4
" .26	34	a	101	5
" .24	35	a	92	5
" .11	36	a	91	3
" .28	37	c	97	4
" .51	38	c	70	3
" .61	39	c	68	3
" . 9	40	b	63	5
" .22	41	b	65	3
" .69	42	a	60	4
" .64	43	a	50	3
" .71	44	a	52	3
" .31	45	b	49	3
" .19	46	b	45	2
" .38	47	b	43	2
" .72	48	b	43	1
" .40	49	a	44	5
" .41	50	a	44	5
" . 6	51	a	37	5
" .54	52	a	33	4
" .58	53	a	26	3
" .45	54	a	35	3
" .36	55	a	48	4
" .29	56	b	55	3
" .35	57	b	53	3
" .39	58	b	85	4

Actually the longest specimen, No. 19568.5, is not illustrated. It belongs to type (c), is 141 mm. in length, and 4 mm. greatest width. Of the specimens illustrated the most perfect specimen of the larger needles is 19569.3 (fig. 33). It tapers very gradually to a sharp point, is highly polished and has the eye carefully placed in the middle of the needle. One can quite imagine that the maker was very proud of his workmanship.

No. 19569.9 (fig. 40) differs from all the others owing to its thick, stumpy appearance and the abrupt, blunt point. It suggests a pendant rather than an implement. Possibly it is a broken tooth from a comb, though combs with round teeth were not common.

Three fine specimens illustrated together are Nos. 19569.19, .38, .72 (figs. 46-48). All three are very slender, have carefully drilled eyes, sharp points and highly polished surfaces. Perhaps fig. 48 stands out as the finest needle in the collection. The eye is less than 1 mm. in diameter, and reminds one more of a European housewife's needle.

The shortest needle is 19569.58, a rather crude specimen with a large eye (fig. 53). No. 19569.36 (fig. 55) is a well polished needle cut from a longitudinal section of the ulna bone of a sea bird. Three others (figs. 56-58) are also from a bird's wing bone, in this case the radius.

Steele (1930, p. 313) mentions that in Otago needles "appear to be cut out, ground and shaped before the hole is cut or drilled." This was also the method followed at Oruarangi. Two needles, neither of them illustrated, both shaped and finished, show the commencement of the perforation. In one the hole has been started on one side only, while in the other a hole has been commenced from both sides, but a junction has not been effected.

The most outstanding specimen, 19569.80 (fig. 59) is notched on both sides. The notches appear to be human handwork, and must have been made for some definite purpose, though what that purpose was we cannot say. Neither amongst the Oruarangi material nor in the Auckland Museum collection is there another specimen of this kind. Its dimensions are, length 41 mm., greatest width 2 mm. This needle is highly polished and tapers to a very sharp point.

Thatching Needles.

The next implement to be described is one that we have called, for want of a better term, a thatching needle (No. 19574, Plate 66, fig. 60). It is a very fine specimen made from whalebone, round in section, slightly curved throughout its length, and tapering gradually to a fairly sharp point. The dimensions of this implement are as follows: Length 347 mm., greatest width 15 mm. Some 7 mm. from the top, which is flattened, is a perforation 5 mm. in diameter.

Though the above mentioned is the only perfect specimen, there are also four fragments obviously belonging to a similar type of implement. They are all about the same diameter, and

one, about one third of the length of the described specimen, has a hole drilled at the top, while another, the longest fragment of the four, is broken off 175 mm. above the point. This last specimen, when compared with the perfect specimen, might be a "spare part," for what there is of it tallies very closely as regards dimensions, and the same gradual tapering is a noticeable feature.

Pickers.

The number of pickers (14) in the collection is small. They are mostly made from a length of wing bone of a large sea bird, such as a gannet or albatross. Two such specimens from the radius of a sea bird show a perforation at the top, and may have been threaders. Apart from the two specimens mentioned, none of the other specimens shows any signs of working, except at the point. In most cases the point is of considerable length, and tapers very gradually. The strongest specimen is 19570.2, the dimensions of which are given in the table below. It is made from a piece of a human radius.

Museum No.	Fig.	Length.	Greatest Width mm.	Length of Point mm.	Material.
19570. 4	63	85	6	22	Ulna of a sea bird
" . 5	62	149	7	13	Radius of a sea bird
" . 8	61	149	7	7	Radius of a sea bird
" . 2	—	192	21	21	Human radius
" . 9	—	222	4	8	Radius of a sea bird
" . 3	—	125	15	21	Humerus of a sea bird
" .15	—	119	5	20	Radius of a sea bird

Chisels.

A fine range of chisels is included in the collection. For lack of space it has only been possible to figure seven, so we shall commence with a detailed description of those figured (Plate 65, figs. 64-70).

Museum No.	Fig.	Length mm.	Greatest Width mm.	Length of Point or Bevel. mm.	Material.
19575.24	64	136	29	39	Human femur.
" . 5	65	134	25	42	Human femur.
" .12	66	120	17	20	Human fibula.
" .31	67	97	18	18	Human bone.
" .23	68	76	7	37	Proximal end of a sea bird's ulna.
" . 6	69	88	12	26	Distal end of humerus of gannet or gull.
" . 2	70	112	23	58	Human femur.

Fig. 64 is fractured at the proximal end. It would still be possible to use this implement, though probably it was originally squared across. It is a strong implement, capable of giving much service.

In fig. 65 a fine specimen is illustrated. The bevel has been carefully worked down and culminates in a keen edge, that is, a cutting edge. The proximal end is squared across. A broad groove is noticeable 55 mm. from the proximal end, indicating perhaps that the former owner had intended to use the bone for some other purpose.

A slender, well made specimen is shown in fig. 66. The most interesting feature is the bevel worked on both faces. On the back the bevel is very pronounced, while at the front it commences 4 mm. from the edge, which is somewhat blunt.

The finest bone chisel in the collection, or for that matter, in the Auckland Museum, is seen in fig. 67. Unfortunately, the photograph does not do it justice. Manufactured from human bone, it resembles in shape a well made stone chisel. It has been highly polished on all its surfaces, except part of the back, where it still shows cancellous tissue. The bevel has been carefully shaped, and the edge is very keen. Such a chisel would appear to be quite suitable for working wood.

Of the remaining chisels that are illustrated, the main points of interest can be gleaned by examining the illustrations, figs. 68-70, and consulting the table published earlier in this section.

In addition to those illustrated there are in the collection some 28 specimens, varying in length from 63-131 mm., some being fragments only. Five are perforated at the proximal end. The material from which they are made is chiefly human or bird bone.

We have no record as to how bone chisels were used. It is possible that those with a keen edge were used for carving wood, while the duller edged specimens may have been used for chipping away charred wood, for we know that the Maori made use of fire when reducing wood to the required size.

Bird Spear Points, or Makoi.

There is only one perfect specimen, No. 19571.14 (Plate 65, fig. 74) in the series, though quite a number of the imperfect specimens have only a small portion of the point or base broken. Apart from the specimens illustrated, there are twenty fragments, some showing interesting features. In most the barbs are placed singly, with practically an equal distance between the barbs, but 19571.21 has the barbs set in pairs. This fragment shows three sets of pairs.

One fragment is decorated with a human head crudely carved between the last barb and the butt.

Noticeable features common to all the specimens in this series are (a) the barbs are all on one side, (b) the butt is worked down or flattened where it fitted on to the wooden shaft, and (c) none of the barbs is notched or serrated. A number of sting ray barbs in the collection may have been used as points for bird spears, as several have been worked down at the butt, and one is notched on both sides near the butt, apparently so that the lashing would hold more firmly.

The table below gives dimensions and details of the points illustrated.

Museum No.	Fig.	Length mm.	No. of Barbs.	Remarks.
19571.12	71	89	4	Short piece of point broken off. Butt flattened and perforated twice.
„ .10	72	107	6	Point broken. Butt broken. Barbs are equal distance apart.
„ .1	73	164	14	Point sharp. Butt flattened, broken.
„ .14	74	167	7	Point exceedingly sharp. Butt flattened and squared.
„ .11	75	110	4	Point broken. Butt flattened and perforated.
„ .7	76	107	3	Point broken. Butt notched.

Tattooing Instruments, or Uhi.

In this collection there are 75 fairly perfect specimens of tattooing instruments, or *uhi*. Hamilton (1897, p. 308) quotes Cook's remarks that at the Thames and Mercury Bay districts the natives were much more tattooed and had different patterns from those lower down the coast. It would seem that the former occupants of Oruarangi either tattooed extensively, or were in the habit of making the implements and exchanging them with other tribes.

The tattooing instrument, commonly known as *uhi*, may be best described as a piece of bone, sometimes plain, but more frequently toothed like a comb, lashed after the manner of an adze to a wooden handle.

The majority are made from the wing bones of a large sea bird, such as the gannet or albatross (*toroa*). It is interesting to note that Williams (1921, p. 515) gives the word *toroa* as also referring to a tattooing needle made of albatross bone.

Actually our survey refers only to the blade of the instrument, as in every case the handle is missing. The blades are divisible into three types, irrespective of whether they are plain or toothed, as follows: (a) notched at the butt end to facilitate lashing (Plate 66, figs. 77-79), (b) with a hole drilled close to the butt (figs. 80-83), and (c) with the butt plain, that is, lacking either of the above features (figs. 84-86).

This last type (c) constitutes by far the greatest number, as the respective numbers of each type indicate. The numbers are (a) seven, (b) fourteen, (c) fifty-four.

The following table gives details of the blades illustrated.

Museum No.	Fig.	Type.	Length mm.	Width mm.	Edge.	No. of Teeth.
19567.14	77	a	53	7	Toothed	6
„ .57	78	a	41	6	Plain	—
„ .67	79	a	35	8	Toothed	10
„ .31	80	b	65	12	Toothed	14, mostly broken.
„ .65	81	b	38	10	Toothed	8
„ .2	82	b	51	12	Toothed	10, 2 or 3 broken.
„ .62	83	b	34	13	Toothed	8, several broken.
„ .19	84	c	48	9	Finely toothed	11
„ .45	85	c	55	7	Teeth marked but not cut	—
„ .60	86	c	43	6	Toothed	7

The fact that the blades vary considerably is probably due to the fact that any tattooing expert engaged on a subject would have at hand blades of different types, according to the lines to be cut. Thus the blade may be broad or narrow, the edge plain or toothed, the teeth fine or coarse, and so on.

Possibly some of the plain specimens are in an unfinished state, and would have been cut later. Fig. 85 is interesting, for it shows lines lightly marked, but not cut sufficiently to form teeth. Quite a number of split toggles were made into tattooing blades. Two blades, figs. 80, 81, show this feature very clearly. In both the central hole is apparent, and particularly in fig. 81 the notching frequently seen on toggles is to be seen at the top end above the perforation. In fig. 81 the lines decorating a toggle can be seen faintly.

Calabash Stoppers.

A curious mushroom-shaped specimen (No. 19559) is figured on Plate 66, fig. 88. It is 51 mm. in length. The stem is 31 mm. in length and 22 mm. greatest width, and round in section. Its use must be left to conjecture, but the suggestion that it was intended for a calabash stopper or plug seems feasible. For comparison a stone example (No. 19560), also from Oruarangi, is shown in fig. 87. It is 51 mm. in length, while the stem is 25 mm. in length, greatest width 24 mm., and round in section. Unlike the bone specimen, which has a plain head, fig. 87 is carved with grooves similar to those found on the top of the butt of a *patu onewa*. In fact, at first sight one would say it was broken off from that weapon, but apparently it was intended for the same purpose as the bone specimen.

Flutes.

Bone flutes are rare in the collection. Plate 66, fig. 89, illustrates the only perfect specimen. Made from the humerus of a sea bird, it is 110 mm. long and has two stops drilled 18 mm. apart. Another specimen of the same material is 92 mm. in

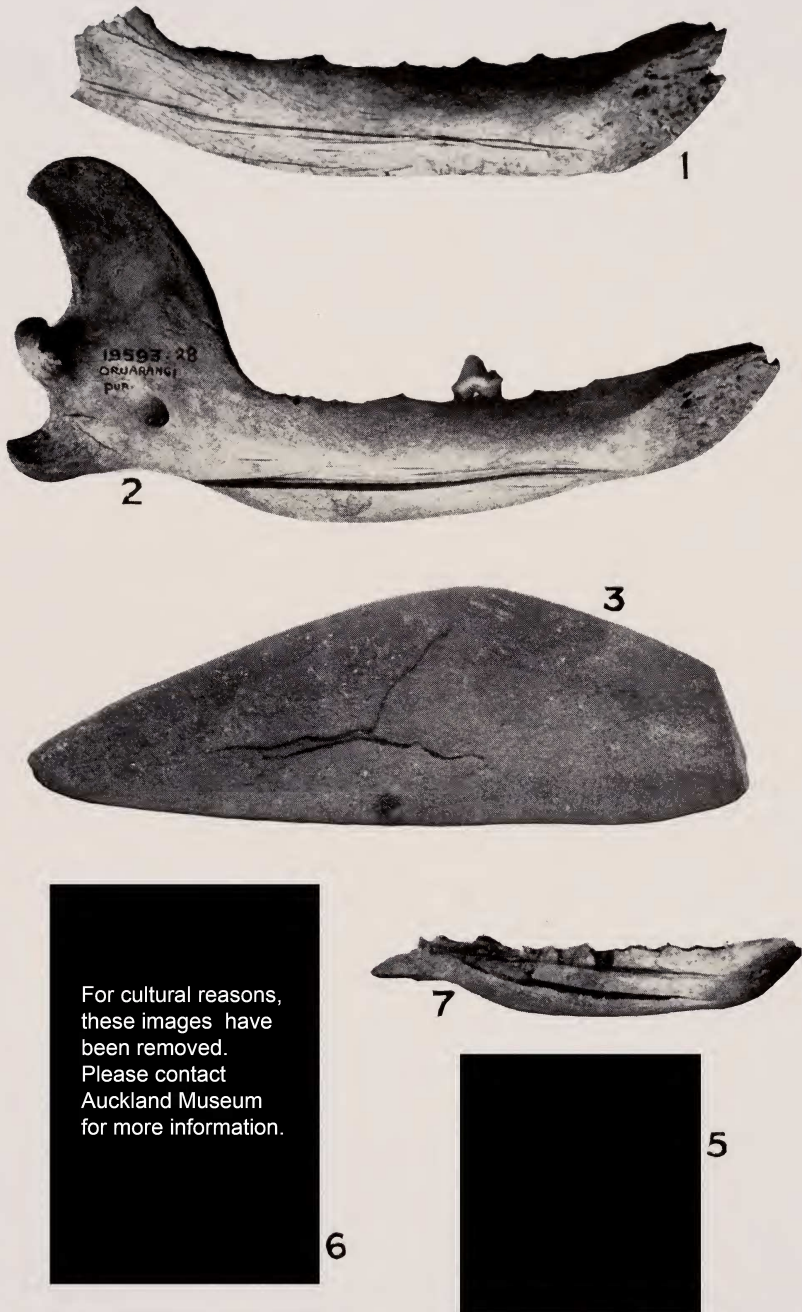
length, with only one stop, and is evidently unfinished. Probably some of the long lengths of wing bone were intended for manufacture into flutes.

In a future paper it is proposed to describe the bone fishing material, of which there is a fine collection, to describe the stone specimens and to summarise conclusions drawn from a study of the material, together with some remarks respecting the site from which this fine collection was obtained.

In conclusion, I have to thank Mr. A. G. Stevenson for his assistance in photographing the specimens illustrating this paper.

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Figs. 1, 2. Stages employed in cutting bone.
Fig. 3. Implement used for cutting or sawing bone.
Fig. 4. Fragment of human skull, showing grooves cut deeply.
Fig. 5. Portion of a human femur, showing method of cutting.
Fig. 6. Piece of human jaw, from which bone for implements has been cut.
Fig. 7. Lower jaw of native dog, showing piece of bone cut for removal.

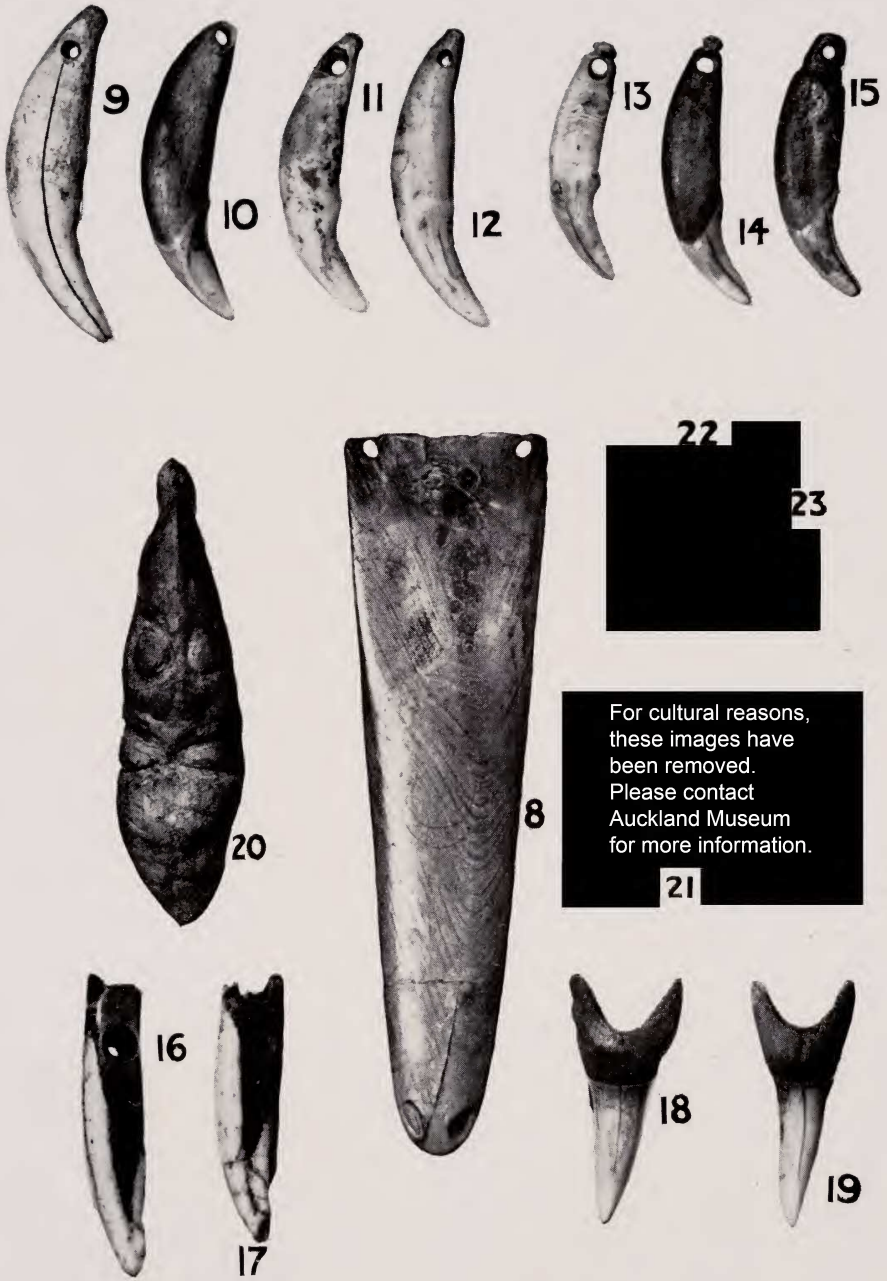


Fig. 8. *Rai-puta*.

Figs. 9-15. Canine teeth of native dog, perforated for necklaces or pendants.

Figs. 16, 17. Pieces of pigs' tusks, drilled and worn as pendants.

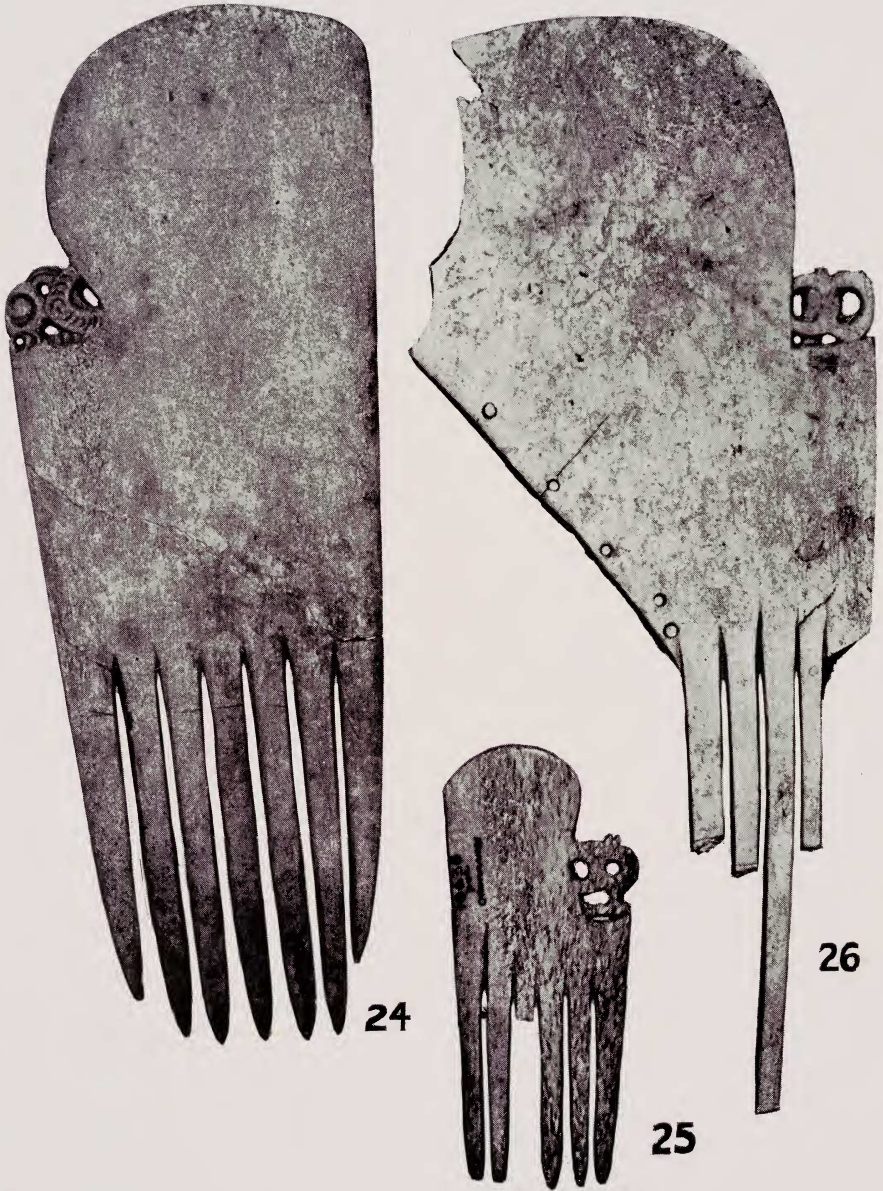
Figs. 18, 19. Ear pendants, made from the teeth of the *mako* shark.

Fig. 20. Pendant, decorated with carved human face.

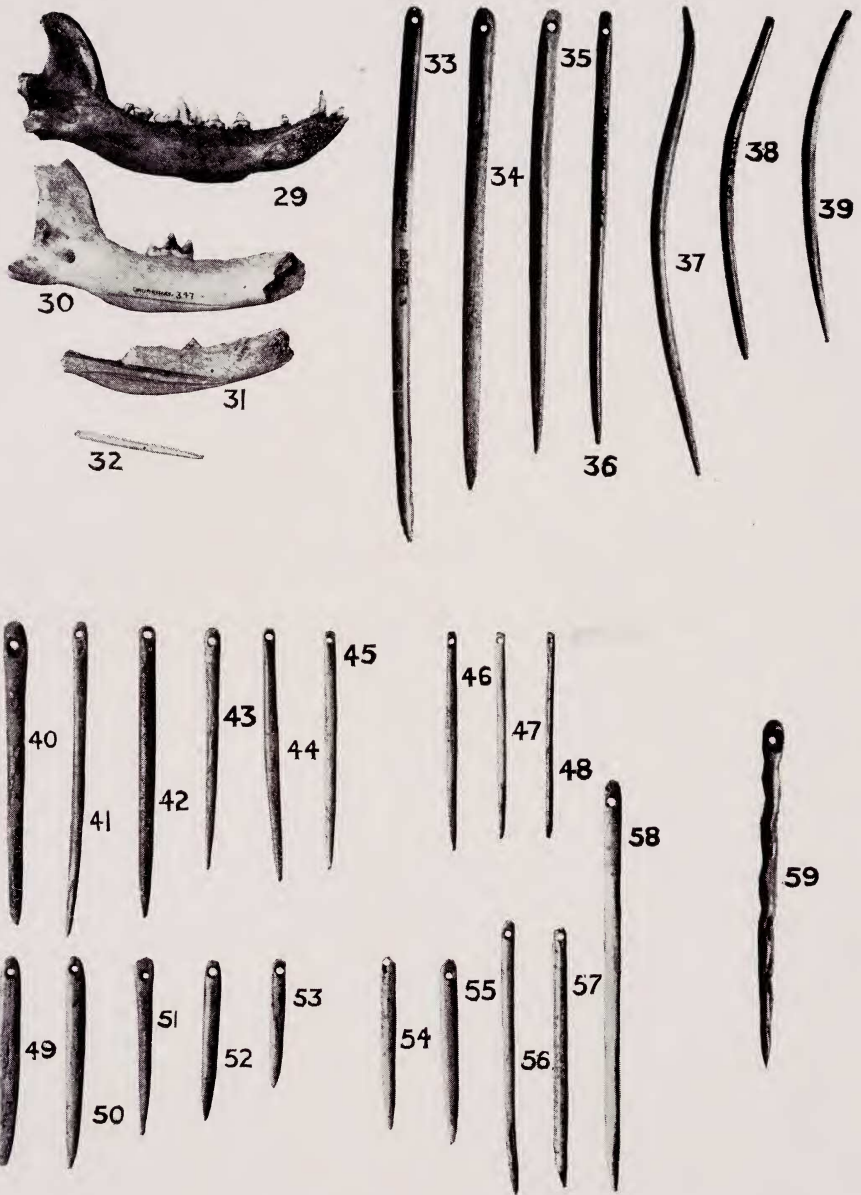
Fig. 21. Pendant, made from a fragment of human skull.

Fig. 22. Ankle bone pendant.

Fig. 23. Toe bone pendant.



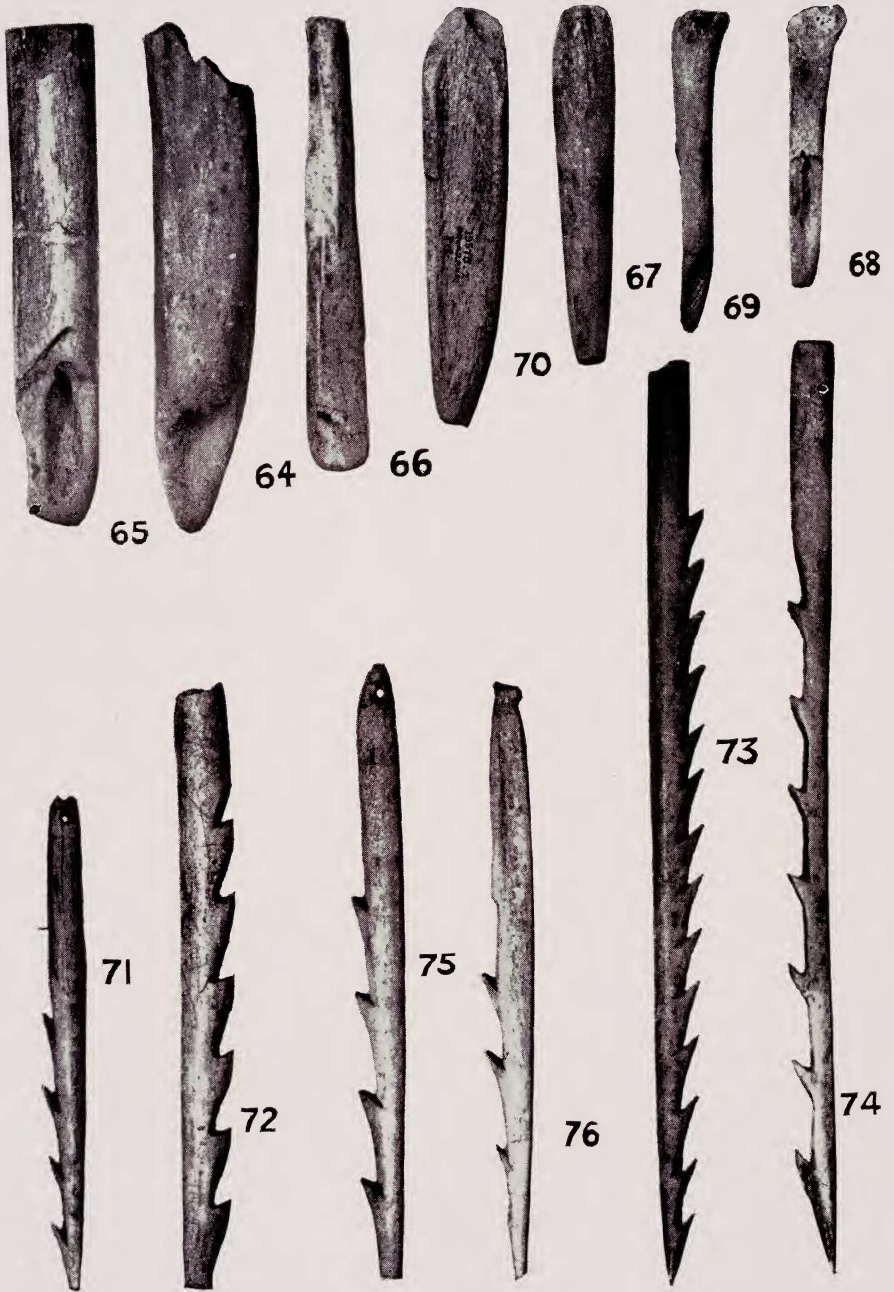
Figs. 24, 25, 26. Bone combs or *heru*.



Figs. 29-32. A series arranged to show the manufacture of a needle from the lower jaw of a native dog.

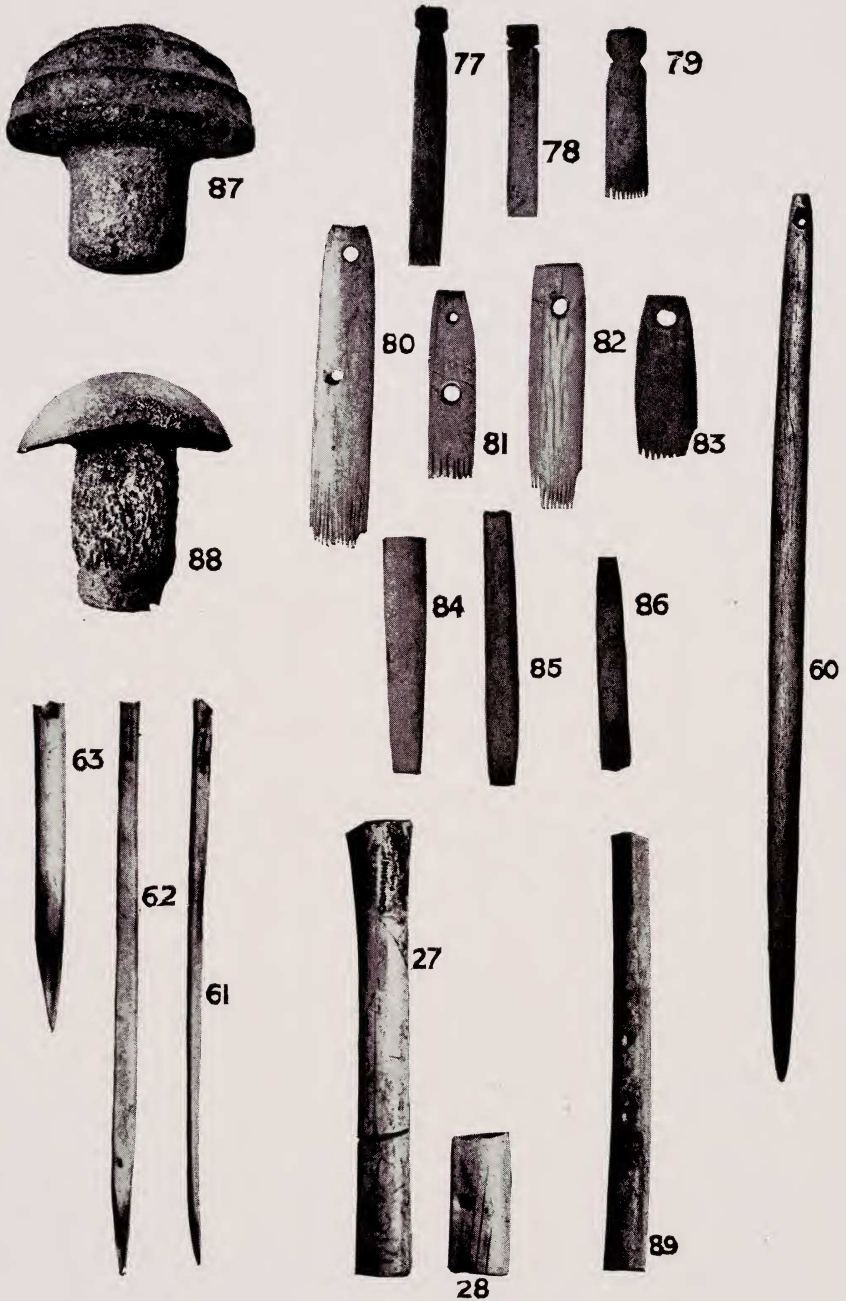
Figs. 33-58. Bone needles. Full details of each needle are given in a table in the text.

Fig. 59. A notched needle.



Figs. 64-70. Bone chisels.

Figs. 71-76. Bone points, or *makoi*, for bird spears.



Figs. 27, 28. Toggle in process of manufacture, and finished specimen.
 Fig. 60. Bone thatching needle.
 Figs. 61-63. Bone pickers.
 Figs. 77-86. Tattooing blades, or *uhi*. Figs. 77, 78 made from broken toggles.
 Fig. 87. Stone "calabash stopper," shown for comparison with fig. 88.
 Fig. 88. Bone "calabash stopper."
 Fig. 89. Bone flute.